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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/976,671	10/12/2001	Toshiyuki Miyabashi	U 013667-3	1087

7590 03/11/2004
William R. Evans
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EXAMINER

SHOSHO, CALLIE E

ART UNIT	PAPER NUMBER
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1714

DATE MAILED: 03/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/976,671

Applicant(s)

MIYABASHI ET AL.

Examiner

Callie E. Shosho

Art Unit

1714

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11/12/03 & 11/21/03.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. All outstanding rejections are overcome by applicants' amendments filed 11/12/03 and 11/21/03.

The following action is non-final in light of the new grounds of rejections against the present claims as set forth below.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 8-9, 15-17, 19-20, 26-31, and 33 are rejected under 35 U.S.C. 102(e) as being anticipated by Freeman et al. (U.S. 2002/0065347).

Freeman et al. disclose ink jet ink comprising water, solvent, pigment including self-dispersible pigment, 1-30% humectant such as glycerol, penetrant such as 1,2-hexanediol, and 0.1-10% film-forming binder which is a polymer emulsion produced by process which comprises the steps of mixing water, monomer, emulsifier, and initiator together to allow emulsion polymerization to proceed to form polymer emulsion followed by adjusting the pH to alkaline, for instance, 8.5, using potassium hydroxide. There is also disclosed a method wherein the ink is

printed using ink jet printer onto substrate (paragraphs 16-17, 19-21, 26, 28-29, 32-33, and 61-62).

Although there is no explicit disclosure of the reactivity of the polymer with divalent metal salt as required in present claim 33, it is understood (see page 10, line 19-page 11, line 7 of the present specification) that the reactivity is determined by both the fine polymer particle diameter and the amount of carboxyl groups on the surface of the particle. It is noted that Freeman et al. disclose polymer emulsions that naturally contain high amounts of carboxyl groups on the surface, i.e. obtained from acid component, and have a diameter of 250-400 nm. Since Freeman et al. clearly meets both criteria for reactivity as disclosed above, it is expected that the reference fine polymer particle will inherently exhibit reactivity similar to that claimed.

In light of the above, it is clear that Freeman et al. anticipate the present claims.

4. Claims 8-9, 15, and 26-33 are rejected under 35 U.S.C. 102(e) as being anticipated by Ganapathiappan (U.S. 2003/0060562).

Ganapathiappan discloses ink jet ink comprising water, solvent, pigment, penetrant, wetting agent, and 1-5% polymer emulsion comprising fine particles of polymer wherein the polymer emulsion is produced by process which comprises the steps of mixing water, monomer, emulsifier, and initiator together to allow emulsion polymerization to proceed to form polymer emulsion followed by adjusting the pH greater than 7 using potassium hydroxide. It is disclosed that the polymer is produced from monomers including 0.1-5% crosslinking monomer and 1-60% hydrophilic monomers comprising acidic functional groups. There is also disclosed a

method wherein the ink is printed using ink jet printer onto substrate (paragraphs 10, 14, 23-24, 33, 62-63, 78, 81, 87, and 89).

Although there is no explicit disclosure of the reactivity of the polymer with divalent metal salt as required in present claim 33, it is understood (see page 10, line 19-page 11, line 7 of the present specification) that the reactivity is determined by both the fine polymer particle diameter and the amount of carboxyl groups on the surface of the particle. It is noted that Ganapathiappan discloses polymer emulsions that naturally contain high amounts of carboxyl groups on the surface, i.e. obtained from hydrophilic monomers comprising acidic functional groups, and have average diameter of 5-500 nm. Since Ganapathiappan clearly meets both criteria for reactivity as disclosed above, it is expected that the reference fine polymer particle will intrinsically exhibit reactivity similar to that claimed.

In light of the above, it is clear that Ganapathiappan anticipate the present claims.

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Freeman et al. (U.S. 2002/0065347) or Ganapathiappan (U.S. 2003/0060562) either of which in view of either Belmont et al. (U.S. 5,630,868) or Suzuki et al. (U.S. 6,153,001).

The disclosures with respect to Freeman et al. in paragraph 3 above and Ganapathiappan in paragraph 4 above are incorporated here by reference.

The difference between Freeman et al. or Ganapathiappan and the present claimed invention is the requirement in the claims of specific type of pigment.

Belmont et al. disclose the use of modified carbon black containing hydrophilic group on its surface wherein the hydrophilic group includes sulfonic acid, sulfinic acid, carboxylic acid and their salts. The motivation for using such pigment is that it has improved water dispersability as compared to untreated carbon black and produces ink with good stability, jettability, print quality, and optical density (col.4, lines 15-21, 29-35, and 44-46, col.5, lines 46-47, col.5, line 63-col.6, line 6, and col.6, lines 41-56).

Alternatively, Suzuki et al. disclose self-dispersing pigment containing hydrophilic group on its surface wherein the hydrophilic group includes sulfonic acid and carboxylic acid and their salts. The motivation for using such pigment is that no dispersant is required to stably disperse the pigment in the ink (col.7, lines 5-62).

In light of the motivation for using specific type of pigment disclosed by either Belmont et al. or Suzuki et al., it therefore would have been obvious to one of ordinary skill in the art to use such pigment in the ink of Freeman et al. or Ganapathiappan in order to produce ink which has good stability, jettability, print quality, and optical density, or alternatively, to produce ink which does not require dispersant, and thereby arrive at the claimed invention.

7. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Freeman et al. (U.S. 2002/0065347) in view of Kubota et al. (U.S. 6,039,796).

The disclosure with respect to Freeman et al. in paragraph 3 above is incorporated here by reference.

The difference between Freeman et al. and the present claimed invention is the requirement in the claim of specific type of penetrant.

Kubota et al., which is drawn to ink jet ink, disclose the use of glycol ether penetrant (col.5, line 66-col.6, line 7) in order to increase penetration of ink into substrate.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use glycol ether penetrant in the ink jet ink of Freeman et al., and thereby arrive at the claimed invention.

8. Claims 21-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Freeman et al. (U.S. 2002/0065347) or Ganapathiappan (U.S. 2003/0060562) either of which in view of Ohta et al. (U.S. 5,954,866).

The disclosures with respect to Freeman et al. in paragraph 3 above and Ganapathiappan in paragraph 4 above are incorporated here by reference.

The difference between Freeman et al. or Ganapathiappan and the present claimed invention is the requirement in the claims of (a) solid wetting agent and (b) pH adjustor.

With respect to difference (a), Ohta et al., which is drawn to ink jet ink, disclose the use of 0.1-40% saccharide in order to impart good moisture retention to the ink and produce ink with suitable viscosity so that the ink can be ejected effectively from the printer (col.8, lines 3-27).

In light of the motivation for using saccharide disclosed by Ohta et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use saccharide in the ink jet ink of Freeman et al. or Ganapathiappan in order to produce ink with good moisture retention and suitable viscosity, and thereby arrive at the claimed invention.

With respect to difference (b), Ohta et al., which is drawn to ink jet ink, disclose the use of pH adjustor such as sodium hydroxide, lithium hydroxide, or potassium hydroxide in order to improve the dispersion stability of the pigment and resin emulsion (col.9, lines 26-31).

In light of the motivation for using pH adjustor disclosed by Ohta et al. as describe above, it therefore would have been obvious to one of ordinary skill in the art to use such pH adjustor in the ink jet ink of Freeman et al. or Ganapathiappan in order to produce ink with good stability, and thereby arrive at the claimed invention.

9. Claims 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ganapathiappan (U.S. 2003/0060562) in view of Kubota et al. (U.S. 6,039,796).

The disclosure with respect to Ganapathiappan in paragraph 4 above is incorporated here by reference.

The difference between Ganapathiappan and the present claimed invention is the requirement in the claims of specific type of penetrant.

Kubota et al., which is drawn to ink jet ink, disclose the use of glycol ether penetrant (col.5, line 66-col.6, line 7) in order to increase penetration of ink into substrate.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use glycol ether penetrant in the ink jet ink of Ganapathiappan, and thereby arrive at the claimed invention.

10. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ganapathiappan (U.S. 2003/0060562) in view of McCain et al. (U.S. 5,981,623).

The disclosure with respect to Ganapathiappan in paragraph 4 above is incorporated here by reference.

The difference between Ganapathiappan and the present claimed invention is the requirement in the claims of specific type of penetrant.

McCain et al., which is drawn to ink jet ink, disclose the use of 1,2-hexanediol or 1,2-pentanediol in order to improve penetration of the ink into the substrate and eliminate intercolor bleed (col.4, lines 56-67).

In light of the motivation for using specific penetrant disclosed by McCain et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such penetrant in the ink jet ink of Ganapathiappan in order to produce ink which effectively penetrants into paper and does not exhibit intercolor bleed, and thereby arrive at the claimed invention.

11. Claims 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ganapathiappan (U.S. 2003/0060562) in view of Ohta et al. (U.S. 5,954,866).

The disclosure with respect to Ganapathiappan et al. in paragraph 4 above is incorporated here by reference.

The difference between Ganapathiappan and the present claimed invention is the requirement in the claims of specific type of wetting agent.

Ohta et al., which is drawn to ink jet inks, disclose the use of glycerol in order to prevent clogging of the printer nozzles and improve the moisture retention and storage stability of the ink (col.8, lines 36-39 and 44).

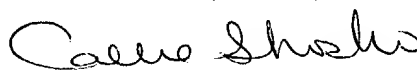
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In light of the motivation for using glycerol disclosed by Ohta et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use glycerol in the ink of Ganapathiappan in order to produce ink with good storage stability and moisture retention that will not clog the printer nozzles, and thereby arrive at the claimed invention.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 571-272-1123. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Callie E. Shosho
Primary Examiner
Art Unit 1714